

Name: _____

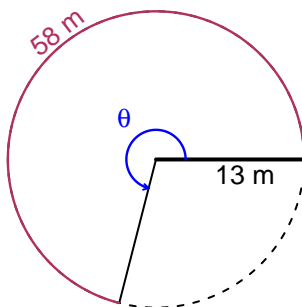
Date: _____

Trig Final (TEST v683)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

Question 1

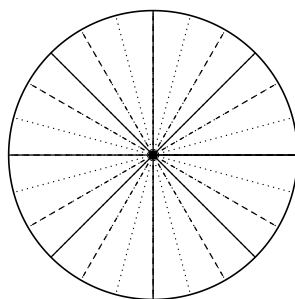
In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 58 meters. The radius is 13 meters. What is the angle measure in radians?



Question 2

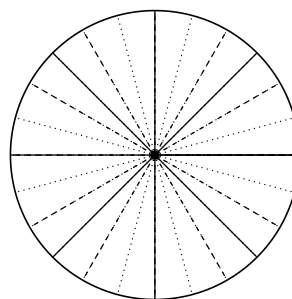
Consider angles $\frac{9\pi}{4}$ and $\frac{-17\pi}{6}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{9\pi}{4}\right)$ and $\cos\left(\frac{-17\pi}{6}\right)$ by using a unit circle (provided separately).

Mark $\frac{9\pi}{4}$



Find $\sin(9\pi/4)$

Mark $\frac{-17\pi}{6}$



Find $\cos(-17\pi/6)$

Question 3

If $\cos(\theta) = \frac{-9}{41}$, and θ is in quadrant III, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -6.71$ meters, an amplitude of 8.63 meters, and a frequency of 4.7 Hz. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).